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**PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)**  
**FY 2008**  
 (For petitions for extension of time under 37 CFR 1.136(a), see 37 CFR 1.136(a)(1))

Application Number: **09/161,680** Office Number (Optional): **48429**  
 Filed: **September 28, 1998**  
 For: **THE GENERATION OF NEW CATALYTIC ACTIVITIES IN ENZYMES**  
 Art Unit: **1656** Examiner: **Steadman, David**

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.  
 The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee
<input checked="" type="checkbox"/> One month (37 CFR 1.17(a)(1))	\$100	\$50
<input type="checkbox"/> Two months (37 CFR 1.17(a)(2))	\$200	\$100
<input type="checkbox"/> Three months (37 CFR 1.17(a)(3))	\$300	\$150
<input type="checkbox"/> Four months (37 CFR 1.17(a)(4))	\$400	\$200
<input type="checkbox"/> Five months (37 CFR 1.17(a)(5))	\$500	\$250

☐ Applicant claims small entity status. See 37 CFR 1.27.  
☐ A check in the amount of the fee is enclosed.  
☐ Payment by credit card. Form PTO-2038 is attached.  
☒ The Director has already been authorized to charge fees in this application to a Deposit Account.  
 The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number: **131437**. I have enclosed a duplicate copy of this sheet.  
 WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the: ☐ applicant/inventor ☐ assignee of record of the entire interest. See 37 CFR 3.71.  
☐ Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB-006).  
☒ attorney or agent of record. Registration Number **31,305**.  
☐ agent of record under 37 CFR 1.34.  
☐ Registration Number if filing under 37 CFR 1.34: \_\_\_\_\_

Signature: Jason W. Bryan Date: 9/28/98  
 Typed or printed name: Jason W. Bryan Telephone Number: 202-659-0100

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required, except multiple forms if more than one signature is required. See 37 CFR 3.73(b).

**Form PTO-2038**  
 (For petitions for extension of time under 37 CFR 1.136(a), see 37 CFR 1.136(a)(1))

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION: **09/161,680** ATTORNEY DKT NO.: **48429**  
 OF: **BORNSCHIEUER ET AL.** CONFIRMATION NO.: **7941**  
 SERIAL NO.: **09/161,680** GROUP ART UNIT: **1656**  
 FILED: **SEPTEMBER 28, 1998** EXAMINER: **STEADMAN, DAVID J**

TITLE: **THE ALTERATION OF SUBSTRATE SPECIFICITY OF ENZYMES**

**REPLY TO NOTICE NON-COMPLIANT AMENDMENT**

Sir,

In response to the notice of non-compliant amendment, Applicants submit the marked version of the substrate specification. Applicants respectfully note that only the corrected section of the non-compliant amendment need be submitted in compliance with 37 CFR 1.121. Applicants also submit with this reply Drauz and Waldmann, *Enzyme Catalysis in Organic Synthesis*, Wiley-VCH Verlag GmbH, Weinheim versions 1995 and 2002 as requested by the Examiner.

**REQUEST FOR EXTENSION OF TIME:**

It is respectfully requested that a one month extension of time be granted in this case and charged to deposit Account No. 14,1437. Please charge any shortage in fees to the same account and please credit any excess fees to such deposit account.

Respectfully submitted,  
Jason W. Bryan  
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 Reg. No. 31,305

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BORNSCHIEUER et al.  
 S.N. 09/161,680  
 000229

**AMENDMENTS TO THE SPECIFICATION (marked version)**

The generation of new catalytic activities in enzymes alteration of the substrate specificity of enzymes

The invention relates to a method for generating new catalytic activities altering the substrate specificity of enzymes.

The synthetic chemist is frequently confronted by the problem in practice that he is unable to follow synthetic routes which are easy and simple to carry out to prepare a chemical compound because these routes would result in compounds in which, for example, the elimination of a required protective group is no longer possible because, otherwise, the synthesized molecule would be destroyed. To solve this problem he frequently has to follow a more complicated and time-consuming synthetic route.

Enzymes cleave chemical bonds under mild conditions. They can therefore sometimes be used to solve synthetic problems of this type, i.e. a protective group can, for example, be eliminated enzymatically under mild conditions without destroying other bonds and thus the molecule. Enzymes thus make it possible to obtain the required substances easily and quickly in the laboratory. Moreover, the enzymatic activity and/or stability is often inadequate for industrial use of the enzymes, so that although the chemical syntheses require a larger number of synthesis stages, nevertheless they are less costly and are therefore implemented industrially.

This is why a large number of studies have been carried out on improving the enzymatic activity and/or stability. Various routes have been followed for this.

It is possible by site directed mutagenesis to achieve very specific improvements in the stability and/or enzymatic activity of enzymes. The disadvantage of site directed mutagenesis of enzymes is that this method requires the availability of a large amount of knowledge about the structure and function of the enzymes from X-ray structural analyses, from modeling, and from comparisons with other enzymes of the same or similar specificity. In addition, the sequence of